

Amendments to the Specification

Please amend the specification by replacing the text at line 1 of page 1 as follows:

METHOD OF MAKING A MEDICAL DEVICE

Please amend the paragraph beginning at line 14 of page 4 as follows:

In at least some embodiments, the bond is achieved by the deformation and/or flow of heated material from only one of the structures being connected. In some such embodiments, only a portion of a first ~~structure~~ ~~structures~~ is heated to a deformable and/or flowable state, for example, to its melting point. ~~Therefore~~, the materials of the two structures do not intermix in a fluid state and fuse to a permanent union upon cooling. Additionally, in at least some embodiments, the mechanical bond is achieved without the use of a separate material, such as a solder, braze, or adhesive. Some other aspects of some examples of heat crimping will become apparent from the discussion of example embodiments below.

Please amend the paragraph beginning at line 1 of page 5 as follows:

Refer now to Figure 1, which is a partially cross-sectional view of an example medical device 10. In at least some embodiments, device 10 may be a guidewire, but as indicated above, other medical devices are contemplated. The guidewire 10 includes proximal guidewire region 11 and a distal guidewire region 13. The proximal region 11 includes proximal end 15, and the distal region 13 includes a distal end 17. The guidewire 10 includes a core member 14, in this embodiment, a core wire ~~[[14]]~~ including a proximal region 16 and a distal region 18. A structural member 12 is connected to the core member 14. In the embodiment shown, the structural member 12 is a coil member 12, such as a tubular coil member, connected to the core member 14 adjacent the distal region 13. The coil member 12 is connected to the core member 14 at one or more attachment areas 20, for example through heat crimping, as will be discussed in more detail below.

Please amend the paragraph beginning at line 10 of page 8 as follows:

In embodiments where different portions of core member 14 are made of different material, the different portions can be connected using any suitable connecting techniques. For example, the different portions of the core wire can be connected using welding (including laser welding), soldering, brazing, adhesive bonding, heat or mechanical crimping, or the like, or combinations thereof. Additionally, some embodiments can include one or more mechanical connectors or connector assemblies to connect the different portions of the core wire that are made of different materials. The connector may include any structure generally suitable for connecting portions of a guidewire. One example of a suitable structure includes a structure such as a hypotube or a coiled wire which has an inside diameter sized appropriately to receive and connect to the ends of the proximal portion and the distal portion. Some other examples of suitable techniques and structures that can be used to interconnect different shaft sections are disclosed in U.S. Patent Application Nos. 09/972,276 ~~entitled "GUIDEWIRE WITH STIFFNESS BLENDING CONNECTION" filed on October 5, 2001,~~ now U.S. Patent No. 6,918,882; and 10/086,992 ~~entitled "COMPOSITE GUIDEWIRE" filed on February 28, 2002,~~ now U.S. Patent No. 7,074,197, both of which are incorporated herein by reference. Some additional examples of suitable interconnection techniques are disclosed in [[a]] U.S. Patent Application Nos. 10/375,766 ~~entitled "COMPOSITE MEDICAL DEVICE" filed on February 26, 2003,~~ now U.S. Patent Publication No. 2004/0167441, and 10/376,068 ~~entitled "ELONGATED INTRACORPORAL MEDICAL DEVICE", filed on February 26, 2003,~~ now U.S. Patent Publication No. 2004/0167442, both of which are also incorporated herein by reference.

Please amend the paragraph beginning at line 19 of page 10 as follows:

The tapered and constant diameter portions of the tapered region may be formed by any one of a number of different techniques, for example, by centerless grinding methods, stamping methods, and the like. The centerless grinding technique may utilize an indexing system employing sensors (e.g., optical/reflective, magnetic) to avoid excessive grinding of the connection. In addition, the centerless grinding technique may utilize a CBN or diamond abrasive grinding wheel that is well shaped and dressed to avoid grabbing core wire during

the grinding process. In some embodiments, core member 14 can be centerless ground using a Royal Master HI-AC centerless grinder. Some examples of suitable grinding methods are disclosed in U.S. Patent Application No. 10/346,698 ~~entitled "IMPROVED STRAIGHTENING AND CENTERLESS GRINDING OF WIRE FOR USE WITH MEDICAL DEVICES"~~ filed January 17, 2003, now U.S. Patent Publication No. 2004/0142643, which is herein incorporated by reference.

Please amend the paragraph beginning at line 18 of page 13 as follows:

The coil member 12 can be disposed about the core member 14 in any of a broad variety of configurations. In the particular embodiment shown, the coil member 12 can extend about a portion of the distal section 18 from a point adjacent the tapering region 37 distally to a point adjacent the distal most portion of the distal section 18. The coil member 12 is attached to the distal core wire section 16 at its proximal end 41 at one or more attachment areas, for example attachment area 20, using a suitable heat crimping attachment technique, or the like, as will be discussed below. The distal end 45 of the coil member 12 can be attached to the distal end of the core member 14 via a tip portion, for example, a rounded tip portion 49. The rounded tip portion 49 can be made of any suitable material, for example a solder tip, a polymer tip, a metal and/or metal alloy tip, or combinations thereof, or the like. Attachment to the tip portion 49 can be made using any suitable technique, including, for example, soldering, welding, heat crimping, adhesive, mechanical bonding or fitting, or combinations thereof, or the like. In some other embodiments, the distal end 45, or other portions of the coil member 12, may be attached to other structure, for example, one ~~one~~ or more spacer member, centering ring, additional coil, shaping or safety ribbon or wire, or may be free of attachment. Additionally, the coil member 12 can be attached to the core member 14 or other structure at one or more intermediate areas.

Please amend the paragraph beginning at line 30 of page 17 as follows:

For another example, refer to Figure 5, which is a partial perspective view of a guidewire 10 similar to that shown in Figure 1, including one or more connection areas 22 that extend longitudinally along a portion of the longitudinal axis of a portion of the coil

member 12, but that do not extend all the way around the perimeter of a portion of the coil member 12. Multiple connection areas 22 are shown that are spaced from one another about the perimeter of the coil member 14, but other arrangements ~~arrangement~~ may be used. For example, the connection areas 22 may be longitudinally spaced from each other, or may be spaced from each other both longitudinally and circumferentially.

Please amend the paragraph beginning at line 9 of page 19 as follows:

Additionally, heat crimping techniques may be used to achieve desirable characteristics in coil member 12 itself by joining two or more coil windings within the coil member 12 together, either alone, or in combination with connection to the core wire 14. For example, the connection areas 22 disclosed above act to connect the coil member 12 to the core member 14, and in addition act to make a connection between adjacent coil windings within the coil member 12. In some embodiments, however, heat crimping techniques may be used to connect two or more coil windings together within the coil member 12 independently of connection of the coil windings to the core member 14. As such, such heat crimping can be used to achieve desired characteristics, such as flexibility and torque transmission characteristics, within the coil member 12 without connection to the core member. Some examples of joining coil windings together on a coiled member, and density patterns that can be used, to achieve desirable characteristics such as flexibility and/or torque transmission characteristics are disclosed in U.S. Patent Application No. 10/656,418 entitled "~~MEDICAL DEVICE COIL~~" filed on even date herewith (Atty. Docket No. ~~1001.1675101~~), now U.S. Patent Publication No. 2005/0054950; and U.S. Patent Application No. 10,656,630 entitled "~~MEDICAL DEVICE COIL~~" filed on even date herewith (Atty. Docket No. ~~1001.1674101~~), now U.S. Patent Publication No. 2005/0054951, both of which are incorporated herein by reference. In some embodiments, such coiled structures can be achieved using the heat crimping techniques disclosed herein.

Please amend the paragraph beginning at line 27 of page 22 as follows:

It should be understood that other embodiments of medical devices, such as guidewires, in accordance with the invention may include alternative constructions or additional structures, such as alternative tip constructions, additional wires or ribbons, such as safety and/or shaping ribbons (coiled or uncoiled), centering or attachment sleeves and/or structures, radiopaque markers, such as coils or bands, and the like, or other such structures. Such additional structures and components, in some embodiments, may be connected to the medical device using heat crimping techniques as disclosed herein, or using other connection techniques. Some examples of additional components and constructions for use in medical devices, such as guidewires, and the like, are disclosed in U.S. Patent Application Nos. 09/972,276 entitled "~~GUIDEWIRE WITH STIFFNESS BLENDING CONNECTION~~" filed ~~on October 5, 2001~~, now U.S. Patent No. 6,918,822; 10/086,992 entitled "~~COMPOSITE GUIDEWIRE~~" filed ~~on February 28, 2003~~, now U.S. Patent No. 7,074,197; and 10/376,068 entitled "~~ELONGATED INTRACORPORAL MEDICAL DEVICE~~" filed ~~on February 26, 2003~~, now U.S. Patent Publication No. 2004/0167442, all of which are incorporated herein by reference.

Please amend the paragraph beginning at line 5 of page 25 as follows:

The coil 26 is attached to the outer coil member 12 at attachment area 24, for example, using a heat crimping technique. The distal end [[97]] of the coil 26 can be free of attachment. However, in other embodiments, the distal end [[97]] of the coil 26 can be attached to the coil member 12, or can be attached to other structure, for example, to the tip portion 49, to the core member 14, to a centering or attachment ring, or other such structure. In some particular embodiments, the inner coil 26 is attached only to the outer coil member 12 at one or more attachment areas, and is essentially free of any other connection to a core member 14, or in some cases, is free of connection to any other structure in the guidewire 410 other than the outer coil member 12. Additionally, the inner coil 26 can be attached to the outer coil member 12 along the entire length of the inner coil 26, or only along a portion of the length thereof. For example, in the embodiment shown, the inner coil 26 is attached only at the proximally disposed attachment area 24. In other embodiments, the coil 26 may be

attached using other arrangements, for example, a distally disposed attachment area, or a combination of proximally and distally disposed attachment areas. Attachment of the inner coil 26 to the outer coil member 12 can be achieved using any suitable heat crimping attachment technique, as discussed above, for example using LASER energy, to heat the outer coil member 12 such that material flows there from, and acts to attach it to the inner coil member 26.

Please amend the paragraph beginning at line 29 of page 25 as follows:

As discussed above, the number, size, shape, location, and/or density pattern of the connection areas 22 can vary greatly, depending somewhat at least upon the desired characteristics of the connection and/or the desired characteristics of the guidewire 10. The number, size, shape, location, and/or density pattern of the connection areas 422 can be similar to the connection areas 22 discussed above, and may be adapted and/or configured to achieve at least some of the same ~~same~~ characteristics.

Please amend the paragraph beginning at line 25 of page 26 as follows:

Such an arrangement of an inner coil being attached only to an outer coil could be used in a broad variety of medical devices. Some ~~examples~~ ~~example~~ of coil constructions that can be used in a broad variety of medical devices are disclosed in U.S. Patent Application No. 10/376,068 ~~entitled "ELONGATED INTRACORPORAL MEDICAL DEVICE" filed on February 26, 2003, now U.S. Patent Publication No. 2004/0167442~~, which is incorporated herein by reference. Such coil constructions disclosed therein can also be achieved by using the heat crimping techniques disclosed herein.